Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **M.Sc.I**

FCYE208

2nd Semester Back Examination 2018-19

CHEMISTRY -II

BRANCH : M.Sc.I(AP), M.Sc.I(MC)

Time : 3 Hours

Max Marks : 70

Q.CODE : F505

Answer Question No.1 which is compulsory and any FIVE from the rest.

The figures in the right hand margin indicate marks.

Q1 **Answer the following questions :** **(2 x 10)**

a) Write the structural formula for each of the following bicyclic compounds
   a. Bicyclo[3.1.1]heptanes
   b. *cis*-Bicyclo[4.4.0]decane (*cis*-decalin)

b) Suggest an explanation for the following observation.
"The dipole moments of furan and pyrrole are in opposite directions"

c) What are different Types of reagents (Mention one example in each category)

d) Draw the Fischer projection of the following molecule: (2*S*,3*R*)-3-phenyl-2-butanol.

e) Draw the most stable conformer of $HOCH_2CH_2F$. Give reason.

f) Explain anti-markownikoff addition.

g) What are the units of first, second and third order rate constants?

h) Give one example for each of the following :
   a. Homogeneous catalysis
   b. Heterogeneous catalysis

i) What are the general characteristics of a catalyst?

j) Mention one example for Free radical substitution.

Q2 **a)** Mention one example for each of the following polycyclic compounds including Spiro and Other special structures. **(5)**

b) Explain the following. **(5)**
   a. Aniline undergoes electrophilic substitution reactions more easily than benzene.
   b. When toluene is subjected to alkylation using *t*-butyl bromide, substitution takes places mainly in the *para* position.

Q3 **a)** Write structural formula for each of the following compounds. **(5)**
   a. (*Z*)-3-Methyl-2-hexene
   b. (*Z,E*)-Benzilidioxime
   c. (*R*)-3-Bromo-2,2-dideuteropentan-3-ol.

b) Draw the *synperiplanar* and *antiperiplanar* conformations of a suitable organic molecule. **(5)**

Q4 **a)** 50% of a second order reaction is completed in 40 minutes. What would be the time required for 75% of the reaction to be completed?. **(5)**

b) A first order has a specific reaction rate of 10^{-3} sec^{-1}. How much time will it take to get converted 50gm or the reactant to 25 gm. **(5)**

Q5 **a)** Explain structuraleffects on acidityand basicity **(5)**
b) Discuss Huckel`s [4n+2] π rule with suitable examples. **(5)**

Q6 Define, with an example, the terms : **(10)**
a) Alternating axis of symmetry
b) Stereogenecity
c) Chirotopicity
d) Resolution of enantiomers

Q7 Explain the term energy of activation. What is the effect of temperature on the rates? How is the energy of activation of a reaction determined? **(10)**

Q8 **Write short answer on any TWO :** **(5 x 2)**
a) Reactive Intermediates.
b) Electrophilic aromatic substitution
c) Determination of the order of reaction.